

# A T F ALTERNATIVE TRANSPORTATION FUELS in Ontario

SOURCEBOOK SOURCEBOOK





# ALTERNATIVE TRANSPORTATION FUELS in Ontario



Ministry of Environment  
and Energy

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# Contents

The first section of this publication is an **investment guide** that provides information on the size and expected growth rate of the North American Alternative Transportation Fuels (ATF) market; Ontario's proximity and access to major markets; and, a number of factors that make Ontario an attractive place to operate an ATF business.

The second section is a **business directory** which contains information on the capabilities and the products and services offered by all of the major players in Ontario's ATF industry.

Interested parties are encouraged to contact the establishments directly for any further information.

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# Introduction to Ontario's Industry

Ontario provided an early and enthusiastic focus for the establishment of the Alternative Transportation Fuels (ATFs) market. Since the start of the 1980s, Ontario has made available financial incentives to convert vehicles to ATFs; maintained taxes at lower levels on ATFs than on conventional fuels; and, directly funded ATF research and development.

Supporting Ontario's actions, the federal government and suppliers of ATFs have also stimulated growth of the industry with financial and other incentives for vehicles and the refueling infrastructure, as well as directly funding ATF research and development.

Government and private sector support has nurtured a number of entrepreneurial companies that have become leaders in ATF technology and expertise. This early involvement and accumulated experience has meant that products and services supplied by Ontario companies have been well received in both domestic and export markets.

Ontario's ATF industry is advantageously positioned to contribute to the rapid growth of the market for alternative fuel vehicles that is expected, starting in the mid-1990s. Whether the need is for vehicle fuel systems; factory-optimized vehicles; research, development and testing services; refuelling stations and components; or supply of fuel, Ontario companies meet the most demanding customer requirements.

Ontario's ATF industry consists of some 40 establishments that manufacture and distribute ATF products and/or carry out research, development and testing. About 720 people are directly employed in the industry. Total sales were approximately \$130 million in 1993. Eighty percent of the value of the industry's output of tradeable goods and services is exported, mainly to the United States. The manufacturing sector of Ontario's ATF industry invests heavily in research and development -- the equivalent of 12 percent of sales.

# Market Opportunities

## Rapid growth is expected in demand for Alternative Fuel Vehicles in North America.

Alternative Transportation Fuels offer the potential to reduce air pollution, make a contribution to energy self-sufficiency by lessening North America's dependence on imported crude oil, and lower motor vehicle operating costs.

In order to take advantage of the potential benefits of ATFs, governments in Canada, the United States and Mexico all provide inducements to increase the size of the alternative fuel vehicle fleet.

These factors are expected to create significant demand for alternative fuel vehicles over the next 20 to 30 years.

The growth rate in alternative fuel vehicles is expected to be highest in the United States where federal, state and local laws, that specify the minimum number of alternative fuel vehicles to be acquired by government and private fleets, have been enacted.

Some recent Canadian and US forecasts project strong ATF growth:

### Natural Resources Canada:

Alternative transportation fuel demand is expected to increase from 1.95 percent of road transport demand in 1991 to 6.28 percent in 2020.

### California Energy Commission:

By 2010, one-third of all vehicles sold in California are expected to be alternative fuel vehicles.

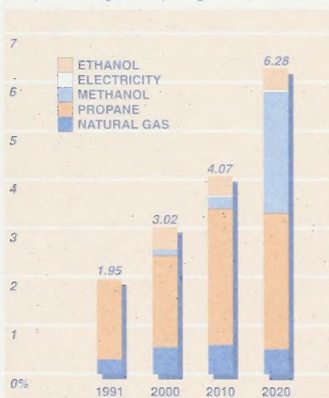
### New York State Energy Planning Board:

The number of alternative fuel vehicles registered in New York is expected to increase from 3,000 in 1993 to 1.1 million in 2010.

### University of Pennsylvania:

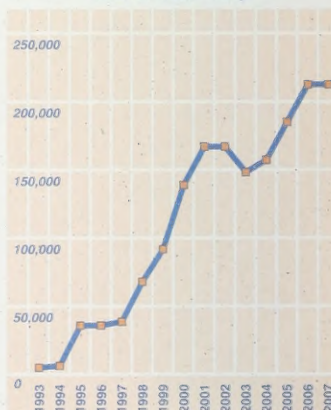
The number of alternative fuel vehicles sold in Region III (Delaware, Maryland, Pennsylvania, Virginia, West Virginia and Washington, D.C.) is expected to increase from 5,000 in 1993 to more than 200,000 in 2006.

Alternative Transportation Fuels  
(Percent of road transport demand)



Source: Natural Resources Canada

Alternative Fuel Vehicle Use in Region III  
(EPACT, CAAA, State/Local Laws,  
and Current Trends)



\*Region III includes Delaware, Maryland, Pennsylvania, Virginia, West Virginia, and Washington, D.C.  
Source: A. Farrell, "Alternative Fuel Vehicles" University of Pennsylvania



# Access to Key Markets

## The North American market is integrated.

The Canadian and United States automotive markets have been integrated under the Automotive Products Trade Agreement (Auto Pact) since 1965.

The North American Free Trade Agreement, which came into effect on January 1, 1994 extends preferential access for Canadian suppliers to the Mexican market.

More than 85 percent of the value of motor vehicles and parts produced in Canada is exported to the United States; and, 75 percent of the value of output of the manufacturing sector of Ontario's ATF industry is exported to the United States.

Value of Merchandise Trade  
Between Canada and the United States, 1993  
(Billions of Dollars)



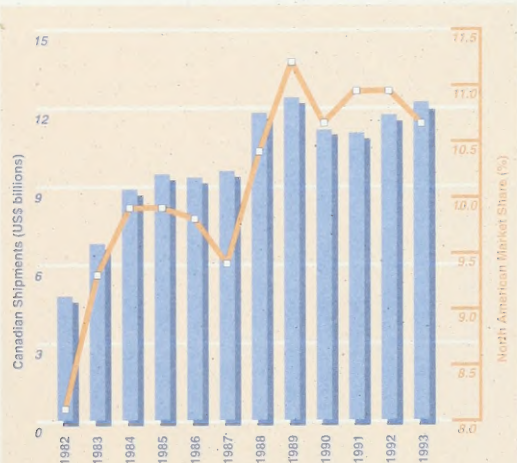
## Ontario is home to a highly competitive and growing automotive parts industry.

More than 95 percent of the value of Canadian automotive parts shipments come from Ontario plants.

Approximately 85 percent of Ontario's production of automotive parts is exported to the United States.

Canadian exports of automotive parts to the United States have been growing at a faster rate than the North American market over the last ten years. As a result, Ontario-based automotive parts manufacturers have been increasing their share of the North American market.

Canadian Automotive Parts Shipments and  
North American Market Share



Sources: Statistics Canada, 31-001 Monthly Survey of Manufacturing,  
U.S. Department of Commerce, Bureau of the Census

# Access to Key Markets

**Ontario provides a gateway with close proximity to most major markets.**

Suppliers of consumer products can reach more than one-half of the United States market in less than one day by road transport from facilities in southwest Ontario. This includes all major cities in the U.S. Northeast and mid-Atlantic regions.

For suppliers to the motor vehicle manufacturers, 58 of the 79 assembly plants in Canada and the United States are located within one day by road transport from facilities in southwest Ontario.





# Investing in Ontario's ATF Industry

## Ontario's advantages in brief

Key factors in nurturing a highly capable ATF industry in Ontario have been:

- Generous support for R&D, financial incentives to fleet and private operators to purchase alternative fuel vehicles.
- Generally lower costs of doing business in Ontario than competing jurisdictions.

Proof of the effectiveness of these advantages lies in the number of Ontario-based ATF companies that have become leading players in North America. They have taken advantage of the supportive environment to develop products and prove them in the discerning and competitive Ontario marketplace before entering other markets where they have also enjoyed considerable success.

## Support for R&D is a keystone of Ontario's economy

All high-tech industries — including the ATF industry — spend heavily on R&D, especially during their early stages of development. Government and private sector support for R&D over the past 10 years has fuelled the growth and development of the industry.

The after-tax cost of performing R&D in Ontario is significantly lower than in any of the G-7 nations. Unlike most jurisdictions, capital costs for scientific research and experimental design do not have to be capitalized in Canada. They can be deducted in full during the year in which they are incurred.

The federal government provides a tax credit of 20 percent of eligible R&D expenses. In 1994, the Government of Ontario introduced an *innovation tax credit* that further reduces the cost of performing R&D by 10 percent. As a result of these measures, the after tax cost of doing \$1.00 of R&D in Ontario is about 47 cents.

The cost of performing ATF R&D in Ontario is further reduced by direct funding of product development and commercialization by governments and fuel suppliers. A number of federal and provincial government ministries, notably Natural Resources Canada, Transport Canada, Ontario's Ministry of Environment and Energy, and Ministry of Transportation of Ontario, and fuel suppliers jointly and individually fund ATF R&D programs.

## Market conditions favour superior product development

Ontario incentives to purchase ATF vehicles take the form of provincial sales tax rebates to offset the initial costs of acquiring alternative fuel vehicles and lower fuel taxes on ATFs than conventional fuels.

However, there are no government mandates that specify the minimum number of alternative fuel vehicles that fleet operators must purchase.

In other words, nobody is compelled to buy an alternative fuel vehicle in Ontario. The market is driven by economics and the competitiveness of the products. These factors have created a demanding and discerning market over the last ten years. These are ideal conditions for developing and proving new ATF products before venturing into bigger markets where the risks of marketing products that are not thoroughly proven are greater.

## Related and supporting industries provide a cluster of expertise

Ontario is home to the second-largest automotive industry in North America after Michigan. The related and supporting industries that have developed in Ontario to serve the motor vehicle assemblers and automotive parts manufacturers are ideally suited to serving the ATF industry.

# Investing in Ontario's ATF Industry

Ontario universities and private institutions boast established centres of excellence in product development, materials R&D, and manufacturing technology development for the automotive industry.

In addition, Ontario has an extensive base of suppliers of materials, manufacturing equipment, tools and dies, and other goods and services that meet the demand cost, quality and delivery standards of the automotive industry.

The automotive and related and supporting industries have created a huge pool of highly-trained workers from which the ATF industry can draw.

Ontario has among the best-developed infrastructure in North America to support alternative fuel vehicle operators. Propane is widely available throughout Ontario. Natural gas is available at public and private refuelling stations throughout southern and eastern Ontario, where most of the province's population lives and fleets are concentrated.

Parts and services to convert motor vehicles to propane or natural gas are available through a network of installation shops. Community colleges offer training courses for technicians who retrofit and service ATF vehicles.

## Industry leaders promote continuous innovation from suppliers

Ontario has produced a number of leaders in the ATF industry. Among these are:

### **Chrysler Canada Limited:**

Development and manufacturing of natural gas, methanol and propane light duty vehicles.

### **FuelMaker Corporation:**

Development and manufacturing of natural gas vehicle refuelling appliances for home and commercial use.

### **General Motors of Canada Limited:**

Development and manufacturing of flexible-fuel (methanol and gasoline) and bi-fuel (natural gas-gasoline) passenger cars.

### **GFI Control Systems Inc.:**

Development and manufacturing of gaseous fuel injection systems for natural gas and propane.

### **Ontario Bus Industries:**

Development and manufacturing of natural gas transit buses.

### **ORTECH Corporation:**

Research and development of ATF engine systems.

### **Sherex/OPW Inc.:**

Development and manufacturing of couplings for natural gas refuelling equipment.

These and other companies form a network of linked firms within the industry. The co-operative and competitive interplay of these companies stimulates continuous innovation. Continuous innovation contributes to improving product quality or reducing costs; raising a company's value-added; seeking better methods in marketing, financing or manufacturing processes. It helps create new business opportunities and sustain existing ones.

## The cost of doing business in Ontario

Perhaps the most attractive feature of investing in Ontario's ATF industry is that the benefits described above come at no additional cost. As shown in the next few pages, the costs of doing business in Ontario are very competitive.

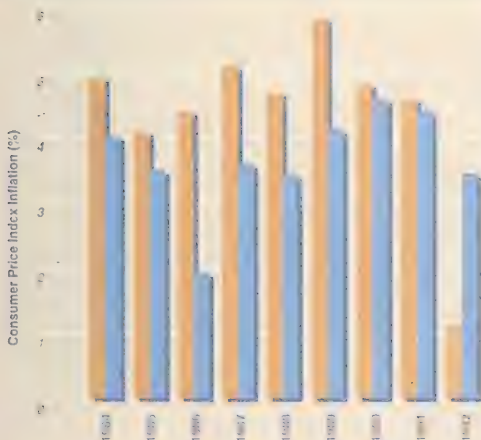


# Doing Business In Ontario

## Inflation is stable and low.

Historically, Canada has had the second lowest rate of inflation, after Japan, of the G-7 nations. In recent years, Canada's inflation rate has been comparable to the United States, tracking the U.S. rate at a slightly higher level.

Increase in Consumer Prices in Canada and U.S.



Source: Ministry of Environment and Energy

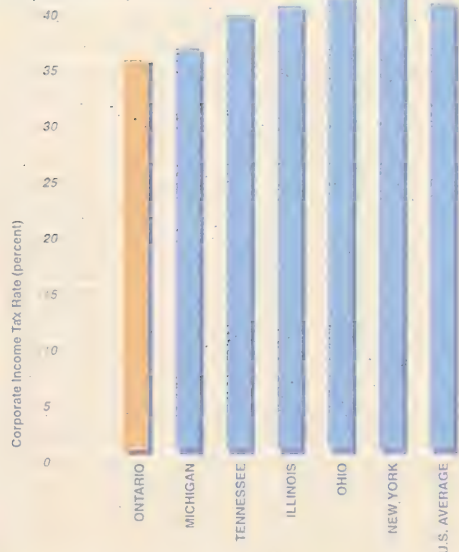
■ Ontario ■ United States

## Manufacturing corporate income taxes are competitive.

The corporate income tax rate for manufacturers is lower in Ontario than in competing US states.

Recent changes in corporate income taxes have lowered the combined tax rate for manufacturers to 35.3 percent from 38.3 percent.

Highest Combined Federal and Provincial/State Corporate Income Tax Rate\*



Source: Ontario Ministry of Finance

\* as of January 1994

# Doing Business in Ontario

Ontario has an educated workforce: the portion of the work force with some post-secondary education is higher than competing jurisdictions.

Approximately 52 percent of Ontario's work force has some post-secondary education.

Raising overall education levels is a priority in Ontario. The share of Ontario's manufacturing work force with some post-secondary education rose by 14 percent between 1980 and 1991 compared to 12 percent in New York, 10 percent in California, 6 percent in Kentucky and 4 percent in Tennessee.

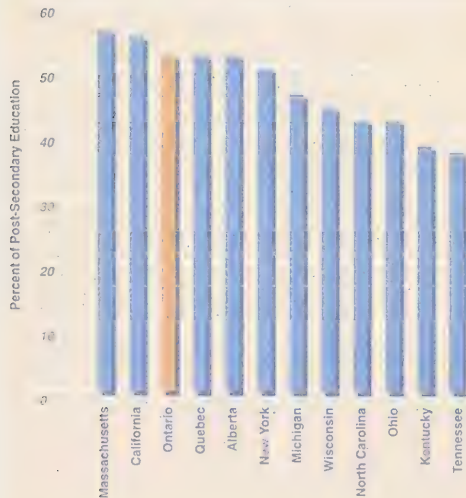
Robust growth in labour productivity has kept unit labour costs competitive.

Labour productivity in the automotive parts industry grew at an average annual rate of more than 4 percent between 1970 and 1990.

Increased productivity and lower unit labour costs have been a major factor in the growth of Canada's share of North American automotive parts shipments from 8.1 percent in 1982 to 10.8 percent in 1993.

\* Source: Statistics Canada and US Department of Commerce.

Share of the Work Force with some Post-Secondary Education, 1991



Source: Premier's Council on Economic Renewal, "A Comparison of Work Force Skills and Wages between Ontario, Canada and Selected States in the U.S.", Ontario 1993.

Index of Output\* per Hour Worked in the Automotive Parts Industry (1986=100)



\* Measured as real GDP in 1986 dollars  
Source: Statistics Canada



# Doing Business in Ontario

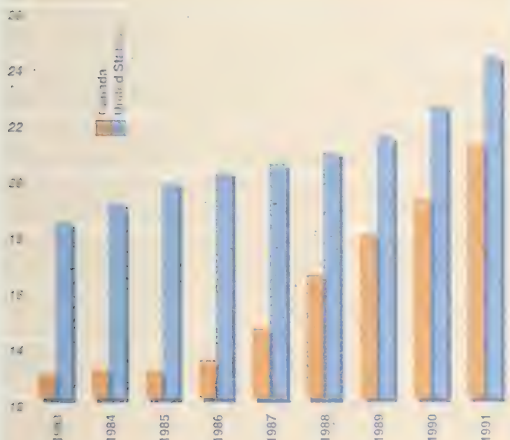
**Labour costs are lower in Canada than in the United States.**

Hourly compensation costs are lower in Canada than in the United States due largely to the lower value of the Canadian dollar and lower costs of employee benefits.

Employee benefits account for 24.5% of hourly compensation costs in Canada's automotive parts industry and 31.4%\* in the United States.

\* Source: Roos, Allen and Hamilton Inc. and Pilonusso Research Associates Inc., "A Comparative Study of the Cost Competitiveness of the Automotive Parts Manufacturing Industry in Canada", 1990.

**Hourly Compensation Costs for Production Workers in Motor Vehicles and Equipment Manufacturers (in U.S. dollars)**



Source: U.S. Bureau of Labour Statistics

**Energy costs in Ontario are among the lowest in North America.**

Ontario has one of the most reliable and low-cost energy supplies on the continent. Although electricity rates have risen recently, Ontario Hydro — the provincial Crown Corporation which generates the bulk of Ontario's electricity — froze rates in 1994 at 1993 levels and has pledged to hold increases to the rate of inflation until the year 2000.

**Comparative Energy Costs**



\* Based on an estimated monthly use of 500,000 therms

\*\* Based on a monthly demand of 20,000 kW and 10,000,000 kWh

Source: The Boyd Company Inc., 1993

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**Vehicle Component Suppliers**

# Diversco Supply Inc.

120 Shearson Crescent  
Cambridge, Ontario  
N1T 1J4

Telephone No.:  
(519) 740-1210  
Facsimile No.:  
(519) 740-7303

**Key Officers:**  
Jon Huddle  
Bob Statham

**Branches:**  
Calgary, Alberta  
Montreal, Quebec

**Human Resources:**  
Total Employees: 30

**Alternative Transportation Fuels Products and Services:**  
Distributor of Sherwood valves for propane and  
natural gas vehicles

**Sales of ATF Products and Services:**  
Major Customers: conversion centres and gas utilities

**Customer Service Programs:**  
Training, technical support

**Vehicle Component Suppliers**

# Fairview Fittings & Manufacturing Ltd.

449 Attwell Drive  
Etobicoke, Ontario  
M9W 5C4

Telephone No.:  
(416) 675-4233  
Facsimile No.:  
(416) 675-9416

**Key Officers:**

Ken MacKenzie  
(Vice President, Sales)  
Jeff Woodward  
(Vice President, Marketing)  
John Urbanski  
(Vice President, Operations)

**Contact:**

Ken MacKenzie

**Human Resources:**

Total employees: 125  
Management: 9  
Engineering/Technical: 3  
Administrative: 15  
Plant: 98

**Alternative Transportation Fuels Products and Services:**

Valves, propane hose assemblies, clamps, hose tubing, brass  
and steel fittings

**Testing and Certification Standards:**

CGA, UL

**Sales of ATF Products and Services:**

Annual sales: \$1 million

**Manufacturing Resources:**

Plant size: 50,000 square feet



## Vehicle Component Suppliers

# GFI Control Systems Inc.

**At GFI our vision is to meet or exceed the environmental requirements of our customers worldwide by offering innovation gaseous fuel solutions of the highest quality and value.**

100 Hollinger Crescent  
Kitchener, Ontario  
N2K 2Z3

Telephone No.:  
(519) 576-4270  
Facsimile No.:  
(519) 576-7045

### Key Officers:

Lloyd Austin  
(President)  
Satya Syngal  
(Vice President)

### Contact:

Tom McIver  
(Sales & Contracts Manager)

### Parent Co.:

Dextek Corp., Stewart &  
Stevenson Services Inc.

### Human Resources:

Total Employees: 76  
Management: 9  
Engineering/Technical: 17  
Administrative: 20  
Plant: 30

### Alternative Transportation Fuels Products and Services:

CNG & propane conversion systems  
CNG tank valves  
High pressure CNG regulators

### Testing and Certification Standards:

AGA/CGA system and component certifications, C.A.R.B.,  
Colorado Department of Health, Texas Railroad Commission

### Sales of ATF Products and Services:

Annual Sales: 10 million  
Percent Exported: 95%

**Major Customers:** Ford Motor Co., Chrysler Corp., Detroit  
Diesel Corp., Hercules Engine Co., NGV Technologies Co.,  
Consumer Gas, Union Gas

### Main Export Markets:

United States, Great Britain, Australia, Argentina, Korea

### Customer Service Programs:

Training, technical support, spare parts

### Manufacturing Resources:

Engineering/technical systems: CAD/CAM, Auto. CAD  
Manufacturing control systems: Symix MIS system  
Quality Standards: ISO 9001, NATO AQAP-1, MIL-Q-9858A  
Plant Size: 36 000 square feet  
Automated/Specialized Manufacturing Systems: CNC machining centres, CNC CMM machine, automated test equipment.  
AGA certified laboratory

### ATF Research and Development:

R & D expenditure as a percent of sales: 15  
Number of employees in R & D: 15  
Specialized facilities and equipment: service centre with dynamometer and vehicle analyzing equipment, calibration facilities

### Capabilities / Achievements

National Energy Resources  
Organization Research and  
Development Award for 1993

Vehicle Component Suppliers

# Interquip

**Interquip's mission is to be by far the best distributor of compressed gas handling equipment and systems in Canada.**

1870 Courtney Park Drive  
East  
Mississauga, Ontario  
L5T 1W1

Telephone No.:  
(905) 564-2428  
Facsimile No.:  
(905) 564-9491

**Key Officers:**

Mel Young (Vice President)

**Contact:**

D. Lahie (Branch Manager)

**Parent Co.:**

RNG Equipment Inc., Ontario

**Branches:**

Coquitlam, Edmonton,  
Calgary, Winnipeg,  
Mississauga, Montreal

**Alternative Transportation Fuels Products and Service:**

Vialle Autogas Systems  
Century Alternate Fuel Systems  
Motor fuel tanks

**Testing and Certification Standards:**

CGA/UL, ULC/UL, ASME

**Sales of ATF Products and Services:**

Major Customers: independent conversion dealers

**Customer Service Programs:**

Training, technical support, 1-800 tech/sales line

**Human Resources:**

Total Employees: 13  
Management: 1  
Sales/Technical: 3  
Administrative: 1  
Sales: 8



Vehicle Component Suppliers

# Inverpower Controls Ltd.

835 Harrington Court  
Burlington, Ontario  
L7N 3P3

Telephone No.:  
(905) 639-4692  
Facsimile No.:  
(905) 639-0961

**Key Officers:**

Dr. S.B. Dewan  
(President)

A.S. Popp  
(Marketing Manager)

**Contact:**

J. Rajda  
(Product Manager)

**Human Resources:**

Total Employees: 125  
Management: 10  
Engineering/Technical: 25  
Administrative: 20  
Plant: 70

**ATF Research and Development:**

R & D expenditures as a percent of sales: 25  
Number of employees in R & D: 15

**Inverpower Controls' aim is to be the leading manufacturer of electronic power systems for efficient conversion of electrical energy.**

**Alternative Transportation Fuels Products and Services:**

Automotive propulsion drives and power conditioners

**Testing and Certification Standards:**

Awarding of certification in process

**Sales of ATF Products and Services:**

Annual Sales: prototype samples  
Major Customers: Fuel cell and bus manufacturers

**Main Export Markets:**

USA

**Customer Service Programs:**

Technical support for system integration

**Manufacturing Resources:**

Quality standards: CSA, IEEE  
Plant size: 60,000 square feet

**Specialized Facilities and Equipment:**

Microlab for control SW development  
Test equipment for product design evaluation.

**Capabilities / Achievements:**

Unique power electronics based product development capabilities, supply products throughout the world.

# Manchester Tank and Equipment Ltd.

105 Spruce Street  
Box 511  
Tillsonburg, Ontario  
N4G 4J1

Telephone No.:  
(519) 842-9081  
Facsimile No.:  
(519) 842-3414

## Key Officers:

Darrel Reifschneider (CEO)  
Rob Reifschneider  
(Senior Vice President)  
Ben Sampson (Vice President,  
Manufacturing)

## Contact:

Walt Lileikis

## Parent Co.:

Brentwood, Tennessee

## Human Resources:

Total Employees: 91  
Management: 4  
Engineering/Technical: 1  
Administrative: 6  
Plant: 80

**Manchester Tank is absolutely committed to provide our customers defect free products and services that meet all mutually agreed upon requirements, on time, in partnership with our suppliers and employees.**

## Alternative Transportation Fuels Products and Services:

Propane Motor Fuel/RV Tanks  
Percent Exported: 20  
Major Customers: Gas Equipment Supplies,  
Interquip Division of RNG

## Main Export Markets:

USA

## Testing and Certification Standards:

ASME, National Board of Boiler and Pressure Vessel Inspectors, Ontario Ministry of Consumer and Commercial Relations

## Manufacturing Resources:

Engineering/Technical Systems: CD  
Manufacturing Control Systems: MRP II  
Quality Standards: TQM/ASME  
Plant Size: 45,000 square feet

## ATF Research and Development:

Handled by parent company



## Vehicle Component Suppliers

# S.C.M. Technologies

PO Box 1000  
97 Lyon Avenue North  
Tilbury, Ontario  
N0P 2L0

Telephone No.:  
(519) 682-1313  
Facsimile No.:  
(519) 682-3630

### Key Officers:

James G. Marsh  
(President)

### Contact:

Peter Thorpe

### Human Resources:

Total Employees: 78  
Management: 5  
Engineering/Technical: 5  
Administrative: 8  
Plant: 60

SCM Technologies will design, engineer and manufacture the finest quality gas cylinder and related components for the packaged gas industry. We use the highest calibre personnel, research, materials, and processes to ensure that our products are at the forefront of technology. Our goal is to deliver these world class products on time and at competitive prices with the highest levels of customer service and integrity thus ensuring customer satisfaction and steadily increasing profits and shareholder returns.

### Alternative Transportation Fuels Products and Services:

Lightweight high strength steel cylinders for NGV

### Testing and Certification Standards:

NGV 1, NGV 2, CSA B51

### Sales of ATF Products and Services:

Annual Sales: \$100,000  
Percent Exported: 20  
Major Customers: Natural Gas Utilities

### Main Export Markets:

USA, Mexico

### Manufacturing Resources:

Engineering/Technical Systems: CAD  
Quality Standards: US DOT, Transport Canada  
ISO 9002 standard pending  
Plant Size: 32,000 square feet  
Automated/specialized manufacturing systems:  
deep drawing and ironing, hot spinning, heat treating

### ATF Research and Development:

R&D expenditures as a  
percentage of sales: 17  
Number of Engineers in  
R & D: varies

## Vehicle Component Suppliers

# Sherex/OPW Inc.

4180 Morris Drive  
Burlington, Ontario  
L7L 5L6

Telephone No.:  
(905) 639-9400  
Facsimile No.:  
(905) 639-9537

### Key Officers:

Joe Scherer  
(General Manager)  
John Heenan  
(Vice President, Marketing)  
Andrew Johnson  
(Secretary Treasurer)

### Contact:

John Heenan

### Parent Co.:

joint Venture -  
Sherex Industries Limited  
and  
OPW Fuelling Components  
Subsidiary/Affiliated Co.:  
Sherex Europe A/S -  
Copenhagen, Denmark

### Human Resources:

Total Employees: 20  
Management: 1  
Engineering/Technical: 10  
Administrative: 2  
Plant: -

**Sherex/OPW is a leading designer, manufacturer and marketer of high quality, engineered pressure components for Alternative Transportation Fuel Vehicle markets worldwide. We will grow by pursuing leading-edge technology opportunities; providing unique engineering solutions and becoming a low cost producer through advanced manufacturing techniques. We provide an environment in which our employees are encouraged to develop their skills, work as a team, and are recognized and rewarded for their contributions.**

### Alternative Transportation Fuels Products and Services:

NGV refuelling nozzles, NGV refuelling receptacles, NGV dispenser storage receptacles, NGV check valves, pressure tight protective caps, in-line filters, precision two-stage NGV pressure regulator, precision three-stage NGV pressure regulator  
Options: High pressure solenoid, fuel pressure sensor, cranking solenoid, idle solenoid, three-stage shut-off and power valve.

### Capabilities / Achievements

Bus nozzle (very high flow; high pressure)  
Pressure tight protective cap  
2 and 3 stage regulators (pressure)

### Testing and Certification Standards:

Accredited laboratory re certification by  
International Approval Services (IAS) - AGA/CGA NGV1, TUV -  
Druckbehv ASME, Texas Railroad Commission

### Customer Service Programs:

Training,  
Technical Support,  
Repair Depots - Canada USA and Western Europe



## Vehicle Manufacturers

## Chrysler Canada Ltd.

P.O. Box 1621  
Windsor, Ontario  
N9A 4H6

Telephone No.:  
(519) 973-2719  
Facsimile No.:  
(519) 973-2895

**Key Officer:**  
S.R. Perkins  
(Director of Engineering)  
**Contact:**  
J.L. Mann ( Manager,  
Product Engineering and  
Development)

**Parent Co.:**  
Chrysler Corporation

**Human Resources in the  
ATF Program:**

Total Employees: 50  
Management: 4  
Engineering/Technical: 30  
Administrative: 1  
Plant: 15  
Number of employees in ATF  
R&D: 50

**Annual R & D Expenditures:**  
\$8 million

**Customer Service  
Programs:**

Training, technical support,  
repair depots,  
marketing programs.

**Chrysler Canada Ltd.'s mission is to produce  
cars and trucks that people will want to buy,  
will enjoy driving, and will want to buy again.**

## Alternative Transportation Fuels (ATF) Vehicle Production

Fuel Type:	Model, Engine Type & Displacement:	Number of Units Produced:	Province/State Produced:	Percent Exported:
Natural Gas	Dodge Ram Van/Wagon, 5.2 L V8 engine	495 (1993 model) 1100 (1994 model)	Ontario	99%
Natural Gas	Dodge Caravan Plymouth Voyager, 3.3L V6 engine	400 (1994 model)	Ontario	100%
Electric	Dodge Caravan Plymouth Voyager	56 (1993 model) 8 (1994 model)	Ontario	97%
Methanol	Dodge Spirit FFV Plymouth Acclaim 2.5L 4 cyl. MPI	5600 (1993 model) 4500 (1994 model)	Illinois	1%
Methanol	Chrysler Imperial FFV 3.3L V6 MPI	1100 (1994 model)	Ontario	2%

## ATF Research and Development Programs in Ontario:

Fuel Type:	Model, Engine Type & Displacement:	Scheduled Completion Date:	Target Markets:
Propane	Dodge Ram Van/Wagon 5.2L V8 engine		Canada
Natural Gas	Dodge Ram Pickup 5.2L V8 engine	October 1994	North America
Natural Gas	Dakota Pickup 5.2L V8 engine	October 1994	North America
Bi-fuel gasoline/CNG	Dakota Pickup 5.2L V8 engine		
Methanol (M85)	Passenger Car 2.5L & 3.3L V6	Summer 1994	North America

## Capabilities / Achievements

CANMET Award for Technology Transfer, June 1993

## Vehicle Manufacturers

# Ford Motor Company of Canada Ltd.

Working together, our employees, dealers and suppliers successfully meet the challenges of ingenuity and global competition by improving customer satisfaction, increasing sales and market share, and successfully launching new products.

The Canadian Road  
Oakville, Ontario  
L6J 5E4

Telephone No.:  
(905) 845-2511  
Facsimile No.:  
(905) 844-1198

**Key Officer:**

R. Bright (Director,  
Environmental Affairs)

**Contact:**

C. Banks (Public Affairs)

**Parent Co.:**

Ford Motor Company

**Customer Service Programs:**

Service support through dealers, regional training programs for fleets as required.

## Alternative Transportation Fuels (ATF) Vehicle Production

Fuel Type:	Model, Engine Type & Displacement:	Number of Units Produced:	Province/State Produced:
Natural Gas	Crown Victoria	planned for 1996	Ontario

## ATF Research and Development Programs in Ontario:

Fuel Type:	Model, Engine Type & Displacement:	Field Testing:	Target Markets:
Electric	Ecostar Van	1994-1997	North America

## Vehicle Manufacturers

## General Motors of Canada Ltd.

General Motors of Canada's goal is to provide engineering leadership and resources to corporate alternative fuels programs with specific focus on powertrain controls design.

1908 Colonel Sam Drive  
Oshawa, Ontario  
L1H 8P7

Telephone No.:  
(905) 644-4171  
Facsimile No.:  
(905) 644-4932

**Key Officers:**

John M. Christie  
Terry W. Ostapiuk  
**Contact:**  
John M. Christie

**Parent Co.:**

General Motors Corporation

**Human Resources:**

Total Employees: 30  
Management: 4  
Engineering/Technical: 25  
Administrative: 1

**Annual R&D Expenditures:**

\$4.5 million  
Number of employees in  
R&D: 30

## Alternative Transportation Fuels (ATF) Vehicle Production

Fuel Type:	Model, Engine Type & Displacement:	Number of Units Produced:	Province/State Produced:	Percent Exported:
M85	Lumina 3.1L V6	500 (1993 model)	Ontario	100%

## ATF Research and Development Programs in Ontario:

Fuel Type:	Model, Engine Type & Displacement:	Scheduled Completion Date:	Target Markets:
Alcohol FFV	4 CYL	September 1996	Canada and USA

**Capabilities / Achievements**

First EPA certified alternative fuel vehicle - 1990 Chevrolet Lumina APV



## Vehicle Manufacturers

## Ontario Bus Industries Inc.

**Ontario Bus Industries' goal is to lead the industry in innovation and quality towards the next generation of transit buses.**

5395 Maingate Drive  
Mississauga, Ontario  
L4W 1G6

Telephone No.:  
(905) 625-9510  
Facsimile No.:  
(905) 625-5218

**Key Officers:**

Peter Reinlaender  
(Vice President, Engineering)  
Tom Powell (Manager,  
R&D Engineering)  
John Riet  
(Project Manager, ATF)

**Contact:**  
Tom Powell

**Subsidiary/Affiliated Co.:**  
Bus Industries of America Inc.

**Human Resources in the  
ATF Program:**

Total Employees: 400  
Management: 1  
Engineering/Technical: 5  
Administrative: 2  
Plant: 400  
Number of employees in ATF:  
R&D: 45

**Annual R&D Expenditures:**  
\$2 million

## Alternative Transportation Fuels (ATF) Vehicle Production

Fuel Type:	Model, Engine Type & Displacement:	Number of Units Produced:	Province/State Produced:
CNG	Cummins L10	189 (1993 model) 200 (1994 model)	Ontario / New York
CNG	Teco Gen/GM427	40 (1994 model)	Ontario / New York
CNG	DDC Series 50	40 (1994 model)	Ontario / New York

## ATF Research and Development Programs in Ontario:

Fuel Type:	Model, Engine Type & Displacement:	Scheduled Completion Date:	Target Markets:
LNG	Cummins L10	September 1994	North America
CNG/Hybrid	Cummins B	Mid 1995	North America

**Customer Service Programs:**

Specialized ATF training programs for transit operators.  
Technical assistance to operators and maintenance.

**Capabilities / Achievements**

Leader in alternative fuel and hybrid technology for transit buses in North America.  
More than 20 million miles experience on CNG transit buses.

## Vehicle Manufacturers

## Overland Custom Coach Inc.

Overland Custom Coach's mission is to  
provide design and engineering leadership in  
small and mid-size buses serving  
North American communities.

R.R. #2  
PO Box 128  
Thorndale, Ontario  
N0M 2P0

Telephone No.:  
(519) 461-1140  
Facsimile No.:  
(519) 461-0523

**Key Officers:**

Ray Dries (President)  
Joe Dries (Vice President)

**Contact:**

Jerry Elmquist

**Subsidiary/Affiliated Co.:**

Overland Custom Coach Inc.  
- USA  
General Coach - Canada

**ATF Research and  
Development:**

Annual R&D Expenditures:  
\$150,000  
Number of employees in  
R&D: 2-4

## Alternative Transportation Fuels (ATF) Vehicle Production

Fuel Type:	Model, Engine Type & Displacement:	Number of Units Produced:	Province/State Produced:	Percent Exported:
CNG	Ford/Gas/460	2 (1993 model)	Ontario	0%
LPG	Ford/Gas/460	1 (1994 model)	Ontario	0%
CNG	Ford/Gas/460	11 (1994 model)	Michigan	0%

## ATF Research and Development Programs in Ontario:

Fuel Type:	Model, Engine Type & Displacement:	Scheduled Completion Date:	Target Markets:
CNG	Ford/Gas/460	July 1994	North America
LPG	Ford/Gas/460	July 1994	North America

## Refueling Station Equipment Suppliers

# Clemmer Industries Ltd.

**Clemmer Industries provides  
technical and product excellence in the  
storage tank industry.**

446 Albert St.  
Waterloo, Ontario  
N2J 4A1

Telephone No.:

(519) 884-1320

Facsimile No.:

(519) 884-6623

### Key Officers:

Elson Fernandes  
(Manager of  
Technical Service)

Doug Scheifley  
(Sales Manager)

### Contact:

Doug Scheifley

### Parent Co.:

Meridian Technologies

### Human Resources:

Total Employees: 95

Management: 10

Engineering/Technical: 6

Administrative: 12

Plant: 67

### ATF Research and

### Development:

R&D and expenditures as a  
percent of sales: 10%

Number of employees in

R&D: 1

### Alternative Transportation Fuels Products and Services:

M-85 fuel infrastructure systems

Propane fuel infrastructure systems

(All systems available as turnkey operations)

### Testing and Certification Standards:

ULC, CSA, CSA National Board

### Sales of ATF Products and Services:

Annual sales: \$ 100,000

Major customers: Canadian Oxygenated Fuels Association

### Customer Service Programs:

Consulting, technical support, sales support, design

### Manufacturing Resources:

Engineering/technical systems: finite element analysis, CAD

Manufacturing control systems: Z-299.3 1984,

QC department.

Quality standards: Z-299.3 1984

Plant size: 145 000 square feet

### Capabilities / Achievements

Hydrogen sulphide road  
transport containers;

Propane unitized ocean  
transport containers;

Vacuum monitored double  
wall pressure vessel tanks  
(above and below ground).



**Refueling Station Equipment Suppliers**

## **Fiba Canning Inc.**

**Fiba Canning Inc.'s goal is to supply and develop the market for utilization of natural gas to replace petroleum to power vehicles; to supply the technology and equipment to control and deliver natural gas from the source gas main to the point of consumption.**

2651 Markham Road  
Scarborough, Ontario  
M1X 1M4

Telephone No.:  
(416) 299-1142  
Facsimile No.:  
(416) 299-0349

**Key Officer:**

Hugh Canning (President)

**Human Resources:**

Total Employees: 33  
Management: 4  
Engineering/Technical: 4  
Administrative: 4  
Plant: 20

**Alternative Transportation Fuels Products and Services:**

Trailers to transport natural gas in liquid or compressed gaseous form.  
Natural gas loading and refuelling facilities.

**Sales of ATF Products and Services:**

Annual Sales: \$1 million  
Percent Exported: 10%  
Major Customers: Soquip, Consumers Gas

**Customer Service Programs:**

Commissioning and training of operators provided with all equipment supplied.

**Manufacturing Resources:**

Engineering/Technical System: yes  
Manufacturing Control Systems: yes  
Quality Standards: meet all North American codes  
Plant Size: 20,000 square feet

**ATF Research and Development:**

R & D expenditure as a percent of sales: 10%  
Number of employees in R & D: 3  
Specialized facilities and equipment: acoustic emission and hydrostatic cylinder testing.

## Refueling Station Equipment Suppliers

# FuelMaker Corporation

**FuelMaker is committed to manufacturing the most innovative refueling products to provide convenient, on-site natural gas refueling.**

70 Worcester Road  
Toronto, Ontario  
M9W 5X2

### Telephone No.

(416) 674-5034

### Facsimile No.:

(416) 674-3042

### Key Officers:

John Lyon

(President and CEO)

David Archbold

(VP Marketing and Sales)

Rod Crawford

(VP Finance)

### Contact:

Stewart Laszlo

(Product Manager)

### Subsidiary/Affiliated Co.:

FuelMaker Inc., USA

### Human Resources:

Total Employees: 73

Management: 5

Engineering/Technical: 20

Administrative: 5

Plant: 20

### Alternative Transportation Fuels Products and Services:

FM4 Vehicle Refueling Appliance

FF300 Fast-Fill Storage System

R410 Remote Refuelling Panel

### Testing and Certification Standards:

Canadian, American, German Gas Associations

### Sales of ATF Products and Services:

Percent Exported: 45%

Major Customers: Union Gas, Consumers Gas,  
Ohio Transmission & Pump Company

### Main Export Markets:

Ohio, Utah, California, Georgia, Switzerland

### Customer Service Programs:

Technical service programs, sales training programs

### Capabilities / Achievements

Certified by the City of Los Angeles.

FuelMaker is a member of the Natural Gas Vehicle Coalition and the International Association for Natural Gas Vehicles.

Refueling Station Equipment Suppliers

# Ingersoll-Rand Canada Inc.

**Ingersoll-Rand will supply products and services that consistently meet the requirements of our customers and each other.**

2360 Millrace Court  
Mississauga, Ontario  
L5W 1W2

Telephone No.:  
(905) 858-8480  
Facsimile No.:  
(905) 858-7685

**Key Officers:**  
S.J. ZalZal  
(President)  
S.G. Hamam  
(General Manager)

**Contact:**  
B.A. Crawford

**Parent Co.:**  
Ingersoll-Rand Company

**Alternative Transportation Fuels Products and Services:**  
Vehicle refuelling systems

**Sales of ATF Products and Services:**  
Annual Sales: \$1 million  
Percent Exported: 0%  
Major Customers: utilities

**Customer Service Programs:**  
Training school, National Service Network



## Refueling Station Equipment Suppliers

## Kingsleigh Industrial Company Ltd.

185 Nipissing Road  
Milton, Ontario  
L9T 1B3

Telephone No.:  
(905) 878-3502  
Facsimile No.:  
(905) 878-6937

**Contacts:**  
Ken Hartig  
(Quality Control Manager)

**Human Resources:**  
Total Employees: 10  
Management: 3  
Engineering/Technical: 1  
Administrative: 1  
Plant: 5

**Alternative Transportation Fuels Products and Services:**  
LPG pressure vessels fabrication

**Testing and Certification Standards:**  
MCCR pressure vessel, ASME, NB and Transport Canada

**Sales of ATF Products and Services:**  
Annual Sales: <\$500,000  
Percent Exported: 0  
Major Customers:  
ICG Propane, Superior Propane, Petro Canada, Dupont

**Customer Service Programs:**  
Technical support, repair depots, LPG service centre and repair

**Manufacturing Resources:**  
Engineering/Technical Systems:  
ESDU pressure vessel design program  
Quality Standards:  
QC manual in accordance with ASME section VIII  
Plant Size: 10,000 square feet  
Automated/Specialized Manufacturing Systems:  
Submerged arc welding, plate rolling, shearing, braking

**Capabilities / Achievements**  
Accreditations with:  
Ontario Ministry of  
Consumer and Commercial  
Relations,  
National Board of Boiler and  
Pressure Vessel Inspectors,  
American Society of  
Mechanical Engineers,  
(U Stamp)

**Refueling Station Equipment Suppliers**

**Kraft Fuels/Alternate Fuels Technology Inc.**

50 Ritin Lane, Unit 20  
Concord, Ontario  
L4C 4C9

Telephone No.:  
(905) 738-0287  
Facsimile No.:  
(905) 738-0931

**Key Officers:**

Franz Keiling (President)

**Contact:**

Franz Keiling

**Alternative Transportation Fuels Products and Services:**

LPG and NGV dispensers  
Calibration and maintenance  
Repairs  
Upgrades

**Testing and Certification Standards:**

CSA, CGA

**Sales of ATF Products and Services:**

Annual Sales: < \$1 million  
Percent Exported: 20%  
Major Customers: Superior Propane, Phillips 66, Sun Oil

**Main Export Markets:**

USA

**ATF Research and Development:**

Specialized facilities and equipment:  
mobile PLG Prover

## Refueling Station Equipment Suppliers

# Sleegers Engineering Inc.

It is the responsibility of all employees of Sleegers Machining and Fabricating Inc. and Sleegers Engineering Inc. to provide a quality product to our customers in a responsible manner. Each employee to the best of his or her abilities is to ensure that all specifications, regulations and any other standards for the product are achieved or exceeded. Continuous product improvement is our goal.

980 Green Valley Road  
London, Ontario  
N6A 4C2

Telephone No.:  
(519) 685-7444  
Facsimile No.:  
(519) 685-2882

**Key Officer:**  
P.J. Sleegers (President)

**Contact:**  
J.L. Adams

### Alternative Transportation Fuels Products and Services:

Automotive propane vessels  
Automotive propane dispensers  
Propane storage tanks

### Testing and Certification Standards:

ASME section VIII Div. I  
CSA Z299.4

### Manufacturing Resources:

Engineering/Technical Systems: Computer Aided Design  
Quality Standards: ASME Section VIII, CSA Z299.4  
Plant Size: 75,000 square feet



## Refueling Station Equipment Suppliers

# Sulzer Canada Inc.

**Sulzer Canada's objective is to maintain our position as leader in NGV equipment through development and production of standardized, cost-effective and reliable refuelling equipment, and active marketing throughout North America.**

60 Worcester Road  
Rexdale, Ontario  
M9W 5X2

Telephone No.:  
(416) 674-2034  
Facsimile No.:  
(416) 213-1031

### Key Officers:

J.C. Godel  
(President)  
P.L. Boven  
(General Manager, NGV)

### Contacts:

P.L. Boven  
G. Stables

### Parent Co.:

Sulzer Ltd.  
Winterthur, Switzerland

### Subsidiary/Affiliated Co.:

Sulzer USA Inc.  
Houston, Texas  
Sulzer Burckhardt  
Basel, Switzerland

### Human Resources:

Total Employees: 20

### Alternative Transportation Fuels Products and Services:

Compressor Stations, Dispensers, Complete Refuelling Systems

### Testing and Certification Standard:

Ontario MCCR  
CSA  
CGA  
CTEP (California)

### Sales of ATF Products and Services:

Annual Sales: >\$5 million  
Percent Exported: 75%  
Major Customers: Consumers Gas, Union Gas, Tren-Fuels

### Main Export Markets:

USA, Mexico

### Customer Service Programs:

After-sales service, field service contracts, overhauls,  
valve repair shop, training

### Manufacturing Resources:

Engineering/Technical Systems: CAD  
Manufacturing Control System: SFC  
Quality Standards: MCCR to CSA standards  
Plant size: 10,000 square feet

### ATF Research and Development:

Specialized facilities and equipment: Test bed for complete stations  
(480 V and 575 V)  
clean room (valve repair)

### Capabilities / Achievements

No. 1 supplier of public NGV refuelling equipment in Canada. Affiliated with the Sulzer group providing world-wide support to the NGV industry.

First dispenser developed jointly with a major liquid fuel dispenser manufacturer (Gilbarco).

**Refueling Station Equipment Suppliers**

# Wilson Technologies Inc.

**Wilson Technologies' mission is to provide  
high quality, safe and reliable CNG  
(compressed natural gas) vehicle fueling  
stations for public and private fleets  
across North America.**

244 Shoemaker Street  
Kitchener, Ontario  
N2E 3E1

Telephone No.:  
(519) 894-9202  
Facsimile No.:  
(519) 894-9941

**Key Officers:**

Rob Adams  
(East Coast President)  
Murray Pennington  
(Engineering Manager)

**Contact:**

Murray Pennington

**Human Resources:**

Total Employees: 30  
Management: 6  
Engineering/Technical: 22  
Administrative: 1  
Plant: 1

**Alternative Transportation Fuels Products and Services:**

Natural Gas Vehicle Refuelling Stations - design/build

**Testing Certifications and Standards:**

All applicable standards, depending on geographic region.

**Sales of ATF Products and Services:**

Annual Sales: \$4 million  
Percent Exported: 90%  
Major customers: Brooklyn Union Gas, SoCal Gas,  
Boston Gas, Cleveland Regional Transit Authority,  
Toronto Transit Commission

**Main Export Markets:**

USA

**Customer Service Programs:**

Design/build, training (technical and safety),  
technical support, maintenance/service

**Manufacturing Resources:**

Engineering/Technical Systems: CAD  
Quality Standards: as applicable

**ATF Research and Development:**

R & D expenditures as a percent of sales: 7%  
Number of Employees in R & D: 2

**Capabilities / Achievements:**

Designed and built North  
America's largest CNG transit  
refuelling station for  
Cleveland RTA.

# Centra Gas Ontario Ltd.

**Centra Gas Ontario's mission is to achieve the highest level of customer satisfaction by providing safe, reliable and economical natural gas service.**

200 Yorkland Boulevard  
North York, Ontario  
M2J 5C6

Telephone No.:  
(416) 491-1880

Facsimile No.:  
(416) 496-5331

## Key Officers:

R.D. Walker

(President)

M.E. Burton

(Vice President, Marketing)

W.M. Bingham

(Vice President, Regulatory)

## Contact:

J. Oosterbaan

## Type and Volume of Alternative Transportation Fuel:

Type of Fuel: Natural Gas

Quantity supplied in latest year: 176,860 cubic metres

## Geographic Area Served:

Eastern and Northern Ontario

## Number of Refuelling Stations Served:

Public Stations: 2

Private Stations: 8

Private with limited public access: 0

Vehicle Refueling Appliances: 65

## Parent Co.:

Westcoast Energy Inc.

## ATF Research and Development:

R&D expenditures as a percent of sales: .015%

Number of Employees in R & D: 0 (full time)

## Human Resources:

Total Employees: 1001

Management: 235

Engineering/Technical: 191

Administrative: 575



# Commercial Alcohols Inc.

**Commercial Alcohols will strive to be the  
premier supplier of renewable ethanols to the  
Canadian market.**

2 Chelsea Lane  
Brampton, Ontario  
L6T 3Y4

Telephone No.:  
(905) 790-7500  
Facsimile No.:  
(905) 790-7700

**Key Officers:**

Douglas MacKenzie  
(President)  
Malcom West  
(Vice President)  
Gary McInerney  
(Vice President)

**Contact:**

Douglas MacKenzie

**Human Resources:**

Total Employees: 49  
Management/Sales: 6/6  
Engineering/Technical: 4  
Administrative: 5  
Plant: 28

**Type and Volume of Alternative Transportation Fuel:**

Type of fuel: Ethanol  
Quantity supplied in latest year: 6 million litres

**Geographic Area Served:**

Ontario

**ATF Research and Development:**

R & D expenditures as a percent of sales: 1%  
Specialized facilities and equipment:  
Laboratory and process equipment

# Consumers Gas Company Ltd.

500 Consumer Road  
Scarborough, Ontario  
M1K 5E3

Telephone No.:  
(416) 495-5699  
Facsimile No.:  
(416) 495-8350

## Key Officers:

Perry Stover (Director,  
NGV Business Development)

## Contact:

Perry Stover

## Human Resources:

Total Employees: 30  
Management: 4  
Engineering/Technical: 7  
Administrative: 5  
Plant: 14

Consumer gas is committed to the development of Natural Gas for Vehicles (on and off-road) and is in the business of providing/distributing natural gas and natural gas related equipment.

## Type and Volume of Alternative Transportation Fuel:

Type of Fuel: Natural Gas  
Quantity supplied in latest year: 20 million cubic metres

## Geographic Area Served:

Greater Toronto Area, Niagara Region, Ottawa and surrounding area

## Number of Refuelling Stations Served:

Public Stations: 31  
Private Stations: 17  
Vehicle Refuelling Appliances: 380

## Customer Service / Marketing Programs:

Technical service days - free vehicle checks  
Natural Times - newsletter  
NGV hotline  
Fueling station operators:  
NGV station signage  
Spring station clean-up  
Fall station clean-up

## ATF Research and Development:

R & D expenditures as a percent sales: 6.5%

## Capabilities / Achievements

Design and development of "turn-key" compressor facilities.

Complete conversion kits custom engineered for specific vehicle models/applications.

# ICG Propane Inc.

800A Denison Street  
Markham, Ontario  
L3R 5M9

Telephone No.:  
(905) 477-3155  
Facsimile No.:  
(905) 477-9357

## Key Officers:

Denys Turcotte  
(General Manager)  
Dave Paradis  
(District Manager)

## Contact:

Dave Paradis

Parent Company:  
Petro-Canada

## Human Resources:

Total Employees: 160  
Management: 10  
Engineering/Technical: 3  
Administrative: 20  
Plant: 127

## Type and Volume of Alternative Transportation Fuel:

Type of Fuel: Propane  
Quantity supplied in latest year: 225 million Litres

## Geographic Area Served:

Canada

## Number of Refuelling Stations Served:

Public Stations: 75 in Ontario

# Liquid Carbonic Inc.

**Liquid Carbonic's goal is  
to establish liquified natural gas (LNG) as  
the alternate fuel of choice for Canada's bus  
and truck fleets.**

140 Allstate Pkwy  
Markham, Ontario  
L3R 5Y8

Telephone No.:  
(416) 266-3161  
Facsimile No.:  
(416) 266-0639

## Key Officers:

Sid Engler  
(Sr. V.P. Marketing)  
Danny Green  
(Market Development Mgr.)

## Contacts:

Danny Green

## Parent Company:

CBI Industries Inc.

## Type and Volume of Alternative Transportation Fuel:

Type of fuel: LNG

## Geographic Area Served:

Canada

## Number of Refuelling Stations Served:

Private stations: 1 (under development)  
Private with limited public access: 1 (under development)

## Customer Service/Marketing Programs:

LNG fuelling station and supply trial

## Capabilities / Achievements

Custom design of LNG plants,  
fuelling stations and the  
supply of LNG to customer  
stations.

## Human Resources:

Total Employees: 565  
Management: 102  
Sales/Engineering/  
Technical: 93  
Administrative: 113  
Plant/drivers: 257

## ATF Research and Development:

Number of Employees in  
R & D: 9



# Methanex Corporation

**Methanex Corporation is a world leader in the production and marketing of methanol and related products to service customers globally. Methanex has sought out strategic alliances within the industry to expand its international production capacity and marketing reach.**

301 Plaza 1  
2000 Argentia Road  
Mississauga, Ontario  
L5N 2R7

Telephone No.:  
(905) 826-3299  
Facsimile No.:  
(905) 826-4620

## Key Officers:

Brian Hannan  
(CEO)  
Brook Wade  
(President)  
Michael Wilson  
(Vice President  
North America)  
**Contact:**  
Don Fitzsimons

## Parent Company:

Methanex Corp. -  
Vancouver, B.C.

## Human Resources:

Total Employees: 1000

## Type and Volume of Alternative Transportation Fuel:

Type of Fuel: Methanol  
Quantity supplied in latest year: 1,950,000 litres

## Geographic Area Served:

Canada

## Number of Refuelling Stations Served:

Public Stations: 6  
Private Stations: 6 (3 in Ontario)  
Private with limited public access: 1

## Customer service/Marketing Programs:

Current focus on municipal fleets and airport rental cars.  
Canadian Oxygenated Fuels Association newsletter.  
Canadian light-duty methanol vehicle program.

# Superior Propane Inc.

Our mission at SPI is to lead the North American clean energy market with quality propane services and products which satisfy our customers' evolving energy needs. We will focus on adding value to our shareholder and providing challenge and reward for our employees and partners.

75 Tiverton Court  
Unionville, Ontario  
L3R 9S3

Telephone No.:  
(905) 475-9200  
Facsimile No.:  
(905) 940-7562

## Key Officers:

D.J. Edwards  
(President and CEO)  
T.I. MacDonald  
(Senior Operating Officer)  
T.A. Henry (Chief)

## Contact:

J.W. Cooper  
(General Manager, Ontario)

## Parent Company:

Norcen Energy Resources Inc.

## Human Resources:

Total Employees: 550-600

## Type and Volume of Alternative Transportation Fuel:

Type of Fuel: Propane  
Quantity supplied in latest year: 500-600 million litres  
(Ontario)

## Geographic Areas Served:

Canada

## Number of Refuelling Stations Served:

Public Stations: 700-750 (Ontario)  
Private Stations: 300-350 (Ontario)

## Customer Service/Marketing Programs:

No cost, no risk conversion program  
Payment program tied to fuel savings  
1200 free litres program  
Refueling agents program  
Site specific station promotions

# Union Gas Ltd.

**The Union Gas NGV business unit is committed to the delivery of a high-quality, cost-effective, convenient, and environmentally superior fuel alternatives to energy consumers in Union's transportation sector.**

NGV Division  
50 Keil Drive North  
Chatham, Ontario  
N7M 5M1

Telephone No.:  
(519) 352-3100  
Facsimile No.:  
(519) 436-5257

## Key Officers:

Paul Shervill (Manager,  
NGV Business Development)  
David MacEacheron  
(Manager, NGV Transit)  
Bryan Goulden  
(Manager, Operations)  
Paul Paolatto  
(Manager NGV Fleets)

## Contact:

Paul Paolatto

## Parent Company:

Westcoast Energy Inc.

## Subsidiary/Affiliated Company:

Trillium Alternative Fuels,  
Trillium, USA

## Human Resources:

Total Employees: 32

## Type and Volume of Alternative Transportation Fuel:

Type of Fuel: Natural Gas

Quantity supplied in latest year: 17.9 million cubic metres

## Geographic Area Served:

Southwestern Ontario (from Windsor to Oakville to  
Owen Sound).

## Number of Refueling Stations Served:

Public Stations: 25

Private Stations: 10

Vehicle Refueling Appliances: 1000

# Trillium Alternative Fuels

Trillium will become a leader in the provision of marketing system design and engineering services to alternative transportation fuel customers across North America.

213 King Street West  
2nd Floor  
Chatham, Ontario  
N7M 1W0

Telephone No.:  
(519) 436-5444  
(519) 436-5442

**Key Officers:**

Paul Shervill (President)

**Contact:**

Paul Shervill

**Parent Co.:**

Westcoast Energy Inc.

**Subsidiary/Affiliated Co.:**

Union Gas Ltd.

Trillium, USA

**Alternative Transportation Fuels Products and Services:**

Alternative fuel feasibility analysis.

Turn-key station design and engineering.

Vehicle technical services.

Maintenance



## Research, Development and Testing

## Cominco Product Technology

**Cominco Product Technology's mission is to advance the technology of Cominco's metals.**

Sheridan Park  
2380 Speakman Drive  
Mississauga, Ontario  
L5K 1B4

Telephone No.:  
(905) 822-2022  
Facsimile No.:  
(905) 822-2882

**Key Officers:**

Dr. E.M. Valeriate (Manager,  
Product Technology Centre)  
**Contact:**  
Dr. E.M. Valeriate (ext.230)

**Parent Co.:**  
Cominco Ltd.

**Human Resources in the****ATF Program:**

Total Employees: 17  
(plus subcontractors)  
Management: 2  
Engineering/Technical: 5  
Administrative: 2  
Laboratory/Shop: 8

## Alternative Transportation Fuels (ATF) Research, Development &amp; Testing Capabilities:

Fuel Type:	Areas of Expertise:	Specialized Equipment:
Diesels	Fuel and batteries	Manufacturing equipment Battery test facilities Continuous casting and metal expanding

**Sales of ATF Products and Services:**

Annual Sales: \$8 million  
Percent Exported: 100%  
Major Customers: battery manufacturers

**Main Export Markets:**

USA, Korea, Spain

**Other Services Offered to Customer:**

Customer technical assistance, product research and development

**Capabilities / Achievements**

Canada Awards for  
Excellence (silver)

## Research, Development and Testing

## The Electrofuel Manufacturing Co. Ltd.

21 Hanna Avenue  
Toronto, Ontario  
M6K 1W8

Telephone No.:  
(416) 535-1114  
Facsimile No.:  
(416) 535-2361

## Alternative Transportation Fuels (ATF) Research, Development &amp; Testing Capabilities:

Fuel Type:	Areas of Expertise:	Specialized Equipment:
Methanol	Engine component	Ceramic glow plugs for heat engines
Electricity	High energy density batteries	Advanced batteries

## Key Officers:

Dr. James K. Jacobs  
Dr. Sankar Das Gupta

## Capabilities / Achievements

Patented lithium rechargeable batteries for electric vehicles

Patented ceramic glow plugs for use in heat-engines

## Research, Development and Testing

# The Electrolyser Corporation Ltd.

**The Electrolyser Corp. Ltd. will be a world market leader in the supply of water electrolysis equipment and through providing hydrogen vehicle refuelling systems develop new markets for electrolytic hydrogen in the transportation sector.**

122 The West Mall  
Etobicoke, Ontario  
M9C 1B9

Telephone No.:  
(416) 621-9410  
Facsimile No.:  
(416) 621-9830

## Key Officers:

A.K. Stuart (CEO)

A.T.B. Stuart  
(V.P. Technology)

## Contact:

M.J. Fairlie  
(Director of Technology)

## Subsidiary/Affiliated Co.:

 Electrolyser Corp.

## Human Resources in the

### ATF Program:

Total Employees: 6-10  
Management: 1  
Engineering/Technical: 4-6  
Administrative: 1  
Laboratory/Shop: 2

## Alternative Transportation Fuels (ATF) Research, Development & Testing Capabilities:

Fuel Type:	Areas of Expertise:	Specialized Equipment:
Hydrogen	Hydrogen production and gas-handling systems	Hydrogen generators and gaseous fuels vehicle refueling equipment
Hythane (natural gas and hydrogen)	Hydrogen supply logistics	

## Sales of ATF Products and Services

Main Export Markets: global

## Major Customers:

Hydro-Quebec  
STCUH (Montreal Urban Transit)  
South Coast Air Quality Management District  
University of California at Riverside  
Mazda

## Other Services Offered to Customer

Hydrogen source/market analysis  
Hydrogen energy system technical and economic assessments

## Capabilities / Achievements

Financial Post Appropriate Technology Award (1992)  
World's first photovoltaic vehicle refueling station (1993)  
Etobicoke Business Excellence Award

# Environment Canada

Environment Canada supports federal government programs on mobile source exhaust emissions ( i.e. inventories, regulation and guideline development, compliance, etc.); we support industry's technology development to address mobile source emissions.

Mobile Sources Emissions  
Division  
Environmental Technology  
Centre  
3439 River Road  
Gloucester, Ontario  
K1A 0H3

Telephone No.:  
(613) 998-9590  
Facsimile No.:  
(613) 952-1006

## Key Officers:

Fred Hendren  
(Manager)  
Greg Rideout  
(Emissions Research)  
Jacek Rostkowski  
(Technology Development)

## Contact:

Peter Barton

## Human Resources in the ATF Program:

Total Employees: 25  
Management: 2  
Engineering/Technical: 13  
Administrative: 1  
Laboratory/Shop: 9

## Alternative Transportation Fuels (ATF) Research, Development & Testing Capabilities

Fuel Type:	Areas of Expertise:	Specialized Equipment:
Ethanol/Methanol/Blends	Exhaust emissions and performance testing	Chassis and engine dynamometers
CNG/LPG/Dual Fuels		Cold chamber with chassis dynamometer
Hydrogen		Sampling systems
		Complete chemical analysis instrumentation for compound characterization

## Other Services Offered to Customer:

Collaboration on joint projects with industry;  
"in kind" resources for technology development



## Research, Development and Testing

## Inco Limited

**Inco's J. Roy Gordon Research Laboratory  
supports Inco's supply of nickel foam;  
nickel hydroxide with nickel metal powder  
for positive plate of batteries; and,  
nickel electrodes.**

J. Roy Gordon  
Research Laboratory  
Sheridan Park  
Research Centre  
2060 Flavelle Boulevard  
Mississauga, Ontario  
L5K 1Z9

Telephone No.:  
(905) 403-2443  
Facsimile No.:  
(905) 403-2530

**Alternative Transportation Fuels (ATF) Research,  
Development & Testing Capabilities:**

<b>Fuel Type:</b>	<b>Areas of Expertise:</b>
Electricity	Batteries

**Key Officers:**

J.A.E. Bell  
V.A. Ettel  
**Contact:**  
V.A. Ettel

**Sales of ATF Products and Services:**

Major Customers:  
Nickel metal hydroxide battery manufacturers (Ni-Fe, NiCd)

**Human Resources:**

Total Employees: 17

## Research, Development and Testing

## International Approvals Services

55 Scarsdale Road  
Toronto, Ontario  
M3B 2R3

Telephone No.:  
(416) 447-6468  
Facsimile No.:  
(416) 447-1026

**Key Officers:**

Doug Hannesen  
(Test Coordinator)  
Henry Wong  
(Product Group Coordinator)  
George Mallinos  
(Certification Engineer)

**Contact:**

Doug Hannesen

**Parent Co.:**

A joint venture of CGA  
Approvals Inc. and  
AGA Laboratories

**Subsidiary/Affiliated Co.:**

AGA Laboratories, USA

**Human Resources in the****ATF Program:**

Total Employees: 10  
Management: 1  
Engineering/Technical: 2  
Administrative: 3  
Laboratory/Shop: 3

CGA Approvals Inc. (a joint partner of IAS)  
is committed to providing quality services of  
uncompromising technical excellence,  
reliability and cost-effectiveness which meet  
and exceed its customers' expectations.

## Alternative Transportation Fuels (ATF) Research, Development &amp; Testing Capabilities

Fuel Type:	Areas of Expertise:	Specialized Equipment:
Natural Gas LPG/Propane	Product testing and certification	High pressure test facilities Special test facilities

**Other Services Offered to Customer:**

Publishing of national standards for natural gas and  
LPG vehicle components and related equipment  
Special test programs for new products and prototypes  
Engineering reports

## Research, Development and Testing

## Motion Concept Vehicles Inc.

**MCV strives for excellence in the manufacture  
of Alternative Fuel Vehicles and consulting  
engineering to the ATF industry.**

1000 Leslie Road, Unit 526  
Mississauga, Ontario  
L5S 1P5

Telephone No.:  
(905) 672-0332  
Facsimile No.:  
(905) 672-0110

**Key Officer:**

Robert J. Waddell  
(President)

**Contact:**

Robert J. Waddell

**Human Resources:**

Total Employees: 4

**Alternative Transportation Fuels (ATF) Research, Development & Testing Capabilities:**

Fuel Type:	Areas of Expertise:	Specialized Equipment:
Natural Gas Hydrogen	Vehicle/Engine development	Engine dynamometer

**Main Export Markets:**

USA

**Other Services Offered to Customer:**

Product development and design - Finite Element Analysis

**Capabilities / Achievements**

Design and development of NG powered Canadian "Super Car"

## Research, Development and Testing

## ORTECH Corporation

2395 Speakman Drive  
Mississauga, Ontario  
L5K 1B3

Telephone No.:  
(905) 822-4111  
Facsimile No.:  
(905) 823-1446

**Key Contacts:**

Lou Bruno (General Manager,  
Engineering & Transportation  
Technologies)  
Stephen Carter (Director,  
Engine Technologies)  
Wendel Goetz, (Manager,  
Engines)

**Human Resources:**

Total Employees: 300+  
Alternative Transportation  
Fuels: 32  
Management: 2  
Administrative: 2  
Laboratory/Shop: 4

**Capabilities / Achievements**

Key role in development of  
five current production NGV  
engines.

Current production of three  
gaseous fueling systems  
developed at ORTECH  
(patented).

**Main Export Markets:**

USA, Europe, Asia

**ORTECH provides comprehensive services  
in the field of alternative fuels for both  
light duty and heavy duty engine platforms.  
Services include design, development,  
performance validation and emission  
characterization. ORTECH is committed to  
providing the highest possible quality of  
technical services which satisfy and preferably  
exceed client expectations. We are client  
focused and seek continuous improvement in  
quality and productivity.**

**Alternative Transportation Fuels (ATF) Research, Development & Testing Capabilities:**

Fuel Type:	Areas of Expertise:	Specialized Equipment:
Natural Gas Propane Methanol Ethanol Biodiesel Hythane Hydrogen	Base engine development. Adaptation to alternative fuels. Low emission development, calibration and certification. Control system development. Durability and deterioration factor.	Computerized engine and chassis dynamometers test facilities. NG in test cells; NG compressor; Lambda meters. CAE, 2-D and 3-D CAD, CAM; Gaseous flow stand (SS and pulsing); ASIC and imbedded microprocessor controller design development. PCB layout software. Computerized mapping, injection. CARB accepted engine and chassis emissions test facilities.

**Annual Sales of ATF Products and Services:**

Annual sales: over \$3 million  
Percent exported: 50%  
Major customers: H.D. engine manufacturers,  
integrated oil multi-nationals, automotive OEMs

**Other Services Offered to  
Customer:**

Training, technology transfer,  
consulting, new product  
start-up assistance  
Registered under ISO 9002



## Research, Development and Testing

## University of Toronto

**The Department of Mechanical Engineering  
at U of T provides research support to  
facilitate the introduction of alternative fuels,  
with special emphasis on the  
potential of alternative fuels for reducing  
exhaust emissions.**

Engine Research &  
Development Laboratory  
Department of  
Mechanical Engineering  
University of Toronto  
5 King's College Road  
Toronto, Ontario  
M5S 1A4

Telephone No.:  
(416) 978-5736  
Facsimile No.:  
(416) 978-7753

Contact:  
Prof. J.S. Wallace

Human Resources:  
Total Employees: 7  
Engineering/Technical: 7

Alternative Transportation Fuels (ATF) Research, Development & Testing Capabilities:		
Fuel Type:	Areas of Expertise:	Specialized Equipment:
Natural Gas Propane (LPG) Methanol Hydrogen	Alternative fuel use in spark ignition and diesel engines.	Engine dynamometer testing, including exhaust gas analysis.

**Sales of ATF Products and Services:**

Major Customers: British Gas, Nissan Canada, Natural  
Science and Engineering Research Council (NSERC),  
Natural Resources Canada

**Capabilities /  
Achievements**  
**Capabilities /  
Achievements**

US patent awarded for  
gaseous fuel injection valve.





